SAFETY DEVICE MORE PARTICULARLY FOR RABBET OF DOOR

BACKGROUND OF THE INVENTION

The technical field of the present invention is that of grooved safety devices for openings such as doors or windows.

Most doors or similar devices used for closing openings are mounted on hinge pins secured to a casing, which form the rotation axis, external of the thickness of the members themselves. Consequently, on the opposite side of members, on opening the leaf, a wide gap is exposed between edges facing the hinged leaf (i.e. door or window) and the casing.

The width of this gap increases the danger which it represents because it is easily accessible, particularly to the hands of children. This danger is completely eliminated by the present invention.

BRIEF SUMMARY OF THE INVENTION

The object of the present invention is to obviate dangers to which children and domestic animals are frequently exposed.

According to the present invention a bellows formed of a plurality of articulatingly connected relatively rigid panels whose opened out folds cover the groove when the door leaf is open, and whose closed folds come together one on another and to the door leaf itself when the latter is closed, whereby the appearance of this arrangement is made as unobtrusive as possible.

According to an embodiment of the invention, the panels of the bellows are joined on either side to plateband members which are respectively applied to the casing and leaf. These platebands can be self-adhesive with a covering which peels off.

To facilitate application, such bellows have their self-adhesive platebands in a jointed position, so adhesion takes place at an angle or flat with respect to each other on a leaf level with the face of the casing.

Between the two platebands the bellows has a short shutter member which, in the folded position is obscured beneath an longer shutter, whereby the whole arrangement is applied to the surface of the opening.

It is advantageous to supply such bellows in portions of different lengths which can be assembled to different heights at the junction between door leaf and casing opening, thus making it possible to cover a height less than the total height of the door, whereby the minimum height is limited to that necessary for providing the requisite protection.

BRIEF DESCRIPTION OF THE DRAWINGS

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which by way of illustration show preferred embodiments of the present invention and the principles thereof and what are now considered to be the best modes contemplated for applying these principles.

In the drawings:

FIG. **1** is a section along a plane perpendicular to the pivot axis of the door leaf of a bellows in the obscured position with the door closed.

FIG. **2** is a similar view of the bellows with the door open.

FIG. **3** is a view of the bellows on a door leaf flush with the surface of a casing.

FIG. **4** is a perspective view, with the door open, showing the superimposition of several portions of a bellows.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the example shown in FIGS. **1**, **2** and **4** of the drawings, a door leaf **1** and the supporting casing **2**, are joined together by means of door hinges **3**. The gap between the door and casing on the face opposite the hinge is masked by a bellows **4** comprising four relatively rigid panels having one outer side member **5** forming a plateband secured by adhesion to the surface of frame **1** and another outer member side **6** also forming a plateband secured by adhesion to the inner surface **7** of the casing in a manner so that the two platebands are perpendicular to each other when it is closed on casing **2**. Between the two platebands **5** and **6**, the bellows **4** including a large shutter **8** and a narrower shutter **9** which are articulatingly connected together and in turn articulated on the edge of platebands **6** and **5** respectively. That is, as seen in FIG. **1**, the bellows is folded first about an apical articulation between the inner shutters **8** and **9**, forming a V shaped or angular disposition of the arms, and then about two folds between plateband **6** and shutter **8**, and plateband **5** and shutter **9** respectively. In this disposition, the inside face of plateband **6** is secured to the casing surface **7** while the outside face of the plateband **5** is secured to the door **1**. As a result, the bellows opens and closes in a variable triangular array with the base defined between the attachment points of the respective platebands **5** and **6** varying in length. In the open position the inner shutter **9** folds over contiguously with its associated plateband **5** on the door leaf while in the closed position the inner shutters **8** and **9** fold over each other and over the same plateband **5**.

In this embodiment, the sum of the widths of the two shutters **8** and **9** must be slightly greater than the distance separating the attachment point on the casing from the attachment point on the door leaf, whilst the door is in the maximum opening position so that as seen in FIG. **2**, the bellows completely covers the gap without interfering with the door movement. Moreover, the width of shutter **8** is virtually double that of shutter **9**.

Thus, as can be seen in FIG. **1**, on closing the door, bellows **4** discreetly folds on the door leaf to the minimum thickness of the superimposition of shutters **8** and **9**.

As seen in FIG. **3**, the device shown can also be applied to a flush hinge door by seaming the plateband **6** to the outer face **10** of a casing **2***a*, and the plateband **5** to the corresponding face **11** of a door **12**, when the door is in the closed position. In such a case, the two platebands **5** and **6** are aligned in substantially the same plane and positioned astride the groove gap **13** with the bellows closed.

To ensure a good application, platebands **5** and **6** on which are articulated shutters **8** and **9** of bellows **4** can be provided with a self-adhesive material protected by a covering which can be peeled off at the time of application. However, other assembly methods are also possible such as nailing, hooking, screwing or the like. The present device protects the hands or limbs of users on the dangerous side of the hinge of openings as well as ensuring the sealing thereof.

When used as a safety device relative to young children or domestic animals, it is sufficient for a bellows of